

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: Boeing Realty Corp. C-6, EM2727

Collection Date: November 20, 2006

LDC Report Date: March 28, 2007

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Tier 1

Laboratory: TestAmerica

Sample Delivery Group (SDG): IPK2310

Sample Identification

MWC015_WG112006_0001

MWC015_WG112006_0001DUP

Introduction

This data review covers 2 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 300.0 for Bromide, Chloride, Nitrate, Nitrite, and Sulfate, EPA Method 310.1 for Alkalinity, EPA Method 415.1 for Total Organic Carbon, and Standard Method 4500-CO₂C for Carbon Dioxide.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified a P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Tier 1.

b. Calibration Verification

Calibration verification data were not reviewed for Tier 1.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the preparation blanks.

IV. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

V. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Field Blanks

No field blanks were identified in this SDG.

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Boeing Realty Corp. C-6, EM2727
Wet Chemistry - Data Qualification Summary - SDG IPK2310

No Sample Data Qualified in this SDG

Boeing Realty Corp. C-6, EM2727
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG IPK2310

No Sample Data Qualified in this SDG

TestAmerica

ANALYTICAL TESTING CORPORATION

TAIT Environmental/Boeing
701 N. Parkcenter Drive
Santa Ana, CA 92705
Attention: Mehmet Pehlivan

Project ID: Boeing C-6 Torrance
EM2727
Report Number: IPK2310

Sampled: 11/20/06
Received: 11/20/06

INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IPK2310-05 (MWC015_WG112006_0001 - Water) - cont.									
Reporting Units: mg/l									
Carbon Dioxide	SM4500-CO2 C	6K21062	N/A	2.0	16	1	11/21/06	11/21/06	
Alkalinity as CaCO3	EPA 310.1	6K30126	N/A	2.0	180	1	11/30/06	11/30/06	
Bromide	EPA 300.0	6K20045	N/A	0.50	ND	1	11/20/06	11/21/06	
Chloride	EPA 300.0	6K20045	N/A	10	120	20	11/20/06	11/21/06	
Nitrate-NO3	EPA 300.0	6K20045	N/A	0.50	7.3	1	11/20/06	11/21/06	
Nitrite-NO2	EPA 300.0	6K20045	N/A	0.50	ND	1	11/20/06	11/21/06	
Sulfate	EPA 300.0	6K20045	N/A	10	33	20	11/20/06	11/21/06	
Total Organic Carbon	EPA 415.1	6K30137	N/A	1.0	ND	1	11/30/06	11/30/06	

TestAmerica - Irvine, CA
Nicholas Marz For Michele Chamberlin
Project Manager

11/04/07

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BOE-C6-0053120

LDC #: 16470B6
SDG #: IPK2310
Laboratory: Test America

VALIDATION COMPLETENESS WORKSHEET
EPA Region 1 - Tier 1

Date: 3/27/07
Page: 1 of 1
Reviewer: [Signature]
2nd Reviewer: [Signature]

METHOD: Alkalinity (EPA Method 310.1), Bromide, Chloride, Nitrate ~~X~~, Nitrite ~~X~~, Sulfate (EPA Method 300.0),
TOC (EPA Method 415.1) Carbon Dioxide (SM 4500-CO2 C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 11/20/06
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IVa.	Matrix Spike/(Matrix Spike) Duplicates	A	MS/MSD dup. (non-client)
IVb.	Laboratory control samples	A	LCS
V.	Sample result verification	N	
VI.	Overall assessment of data	A	
VII.	Field duplicates	N	
VIII.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: A2

1	MW0015_WG112006_0001	11		21		31	
2	↓ dup	12		22		32	
3	MB	13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes: _____

Page: 1 of 1
Reviewer: MM
2nd reviewer: /

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: Boeing Realty Corp. C-6, EM2727
Collection Date: December 4, 2006
LDC Report Date: April 5, 2007
Matrix: Water
Parameters: Sulfide
Validation Level: Tier 1, 2, & 3
Laboratory: TestAmerica

Sample Delivery Group (SDG): IPL0295

Sample Identification

IRZMW001B_WG120406_0001
IRZMW001B_WG120406_0002*
IRZMW002B_WG120406_0001**

*Indicates sample underwent Tier 2 review
**Indicates sample underwent Tier 3 review
All other samples underwent Tier 1 review

Introduction

This data review covers 3 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 376.2 for Sulfide.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Samples indicated by a double asterisk on the front cover underwent a Tier 3 review. A Tier 2 or Tier 1 review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Tier 2 or Tier 1 criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration of each method were met.

Initial calibration data were not reviewed for Tier I.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

Calibration verification data were not reviewed for Tier I.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

V. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VII. Sample Result Verification

All sample result verifications were acceptable for samples on which a Tier 3 review was performed. Raw data were not evaluated for the samples reviewed by Tier 2 or Tier 1 criteria.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

Samples IRZMW001B_WG120406_0001 and IRZMW001B_WG120406_0002* were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration (mg/L)		RPD
	IRZMW001B_WG120406_0001	IRZMW001B_WG120406_0002*	
Sulfide	0.024	0.024	0

X. Field Blanks

No field blanks were identified in this SDG.

Boeing Realty Corp. C-6, EM2727
Sulfide - Data Qualification Summary - SDG IPL0295

No Sample Data Qualified in this SDG

Boeing Realty Corp. C-6, EM2727
Sulfide - Laboratory Blank Data Qualification Summary - SDG IPL0295

No Sample Data Qualified in this SDG

TestAmerica

ANALYTICAL TESTING CORPORATION

17461 Derian Avenue, Suite 100, Irvine, CA 92614 (949) 261-1022 Fax: (949) 260-3297

TAIT Environmental/Boeing
701 N. Parkcenter Drive
Santa Ana, CA 92705
Attention: Mehmet Pehlivan

Project ID: Boeing C-6 Torrance
EM 2727
Report Number: IPL0295

Sampled: 12/04/06
Received: 12/04/06

INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IPL0295-05 (IRZMW001B_WGR0406_0001 - Water) Reporting Units: mg/l									
Sulfide	EPA 376.2	6L05111	0.010	0.10	0.024	1	12/05/06	12/05/06	J
Sample ID: IPL0295-06 (IRZMW001B_WGR0406_0002 - Water) Reporting Units: mg/l									
Sulfide	EPA 376.2	6L05111	0.010	0.10	0.024	1	12/05/06	12/05/06	J
Sample ID: IPL0295-07 (IRZMW002B_WGR0406_0001 - Water) Reporting Units: mg/l									
Sulfide	EPA 376.2	6L05111	0.010	0.10	0.076	1	12/05/06	12/05/06	J
Sample ID: IPL0295-08 (IRZMW003B_WGR0406_0001 - Water) Reporting Units: mg/l									
Sulfide	EPA 376.2	6L05111	0.010	0.10	0.022	1	12/05/06	12/05/06	J
Sample ID: IPL0295-09 (CMW001_WGR0406_0001 - Water) Reporting Units: mg/l									
Sulfide	EPA 376.2	6L05111	0.010	0.10	0.022	1	12/05/06	12/05/06	J
Sample ID: IPL0295-10 (IRZCMW002_WGR0406_0001 - Water) Reporting Units: mg/l									
Sulfide	EPA 376.2	6L05111	0.010	0.10	0.13	1	12/05/06	12/05/06	
Sample ID: IPL0295-11 (IRZMW003A_WGR0406_0001 - Water) Reporting Units: mg/l									
Sulfide	EPA 376.2	6L05111	0.010	0.10	ND	1	12/05/06	12/05/06	

TestAmerica - Irvine, CA
Michele Chamberlin
Project Manager

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BOE-C6-0053128

LDC #: 16470C6
SDG #: IPL0295
Laboratory: Test America

VALIDATION COMPLETENESS WORKSHEET
EPA Region 1 - Tier 1/2/3

Date: 3/27/07
Page: 1 of 1
Reviewer: [Signature]
2nd Reviewer: [Signature]

METHOD: ~~Total~~ Sulfide (EPA Method 376.2)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 12/4/06
IIa.	Initial calibration	A	Not reviewed for Tier I validation.
IIb.	Calibration verification	A	
III.	Blanks	A	
IVa.	Matrix Spike/(Matrix Spike) Duplicates	A	non client
IVb.	Laboratory control samples	A	LCS
V.	Sample result verification	A	Not reviewed for Tier II validation.
VI.	Overall assessment of data	A	
VII.	Field duplicates	SW	(1,2)
VIII.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: * Indicates sample underwent Tier II validation, ** Indicates sample underwent Tier III validation

1	IRZMW001B_WGR0406_0001	11	21	31
2	IRZMW001B_WGR0406_0002*	12	22	32
3	IRZMW002B_WGR0406_0001**	13	23	33
4	MB	14	24	34
5		15	25	35
6		16	26	36
7		17	27	37
8		18	28	38
9		19	29	39
10		20	30	40

Notes: _____

LDC #:
SDG #:

16470C6
See cover

VALIDATION FINDINGS CHECKLIST

Page: 1 of 1
Reviewer: HY
2nd Reviewer: A

Method: Inorganics (EPA Method 376.2)

Validation Area	Yes	No	NA	Findings/Comments
I. Equipment/holding time				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial calibration correlation coefficients > 0.995?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% QC limits?	✓			
Were titrant checks performed as required? (Level IV only)			✓	
Were balance checks performed as required? (Level IV only)			✓	
III. Blank				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. Matrix spike/Matrix spike duplicates and duplicate				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.	✓			
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of ≤ CRDL (≤ 2X CRDL for soil) was used for samples that were ≤ 5X the CRDL, including when only one of the duplicate sample values were ≤ 5X the CRDL.	✓			
V. Laboratory control sample				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	✓			
VI. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

LDC #: 1649006
 SDG #: See cover

VALIDATION FINDINGS CHECKLIST

Page: 1 of 1
 Reviewer: WJ
 2nd Reviewer: K

Validation Area	Yes	No	NA	Findings/Comments
III. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were detection limits < RL?	✓			
IV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
V. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target analytes were detected in the field duplicates.	✓			
VI. Field blanks				
Field blanks were identified in this SDG.		✓		
Target analytes were detected in the field blanks.			✓	

LDC#: 16474C6
SDG#: IPL0295

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: W
2nd Reviewer: A

Inorganics, Method EPA 376.2

☒ Y N NA Were field duplicate pairs identified in this SDG?
☒ Y N NA Were target analytes detected in the field duplicate pairs?

Analyte	Concentration (mg/L)		RPD	
	1	2		
Sulfide	0.024	0.024	0	

V:\FIELD DUPLICATES\FD_inorganic\16470C6.wpd

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Calculation Verification

LDC #: 1647066
 SDG #: See cover

METHOD: Inorganics, Method 376.2
 The correlation coefficient (r) for the calibration of S was recalculated. Calibration date: 12/15/06

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$$\%R = \frac{\text{Found}}{\text{True}} \times 100$$
 Where, Found = concentration of each analyte measured in the analysis of the ICV or CCV solution
 True = concentration of each analyte in the ICV or CCV source

Type of Analysis	Analyte	Conc. (units)	Recalculated r or %R	Reported r or %R	Acceptable (Y/N)
Initial calibration Calibration verification	Blank	0			
	Standard 1	0.122			
	Standard 2	0.366			
	Standard 3	0.61			
	Standard 4	1.22			
	Standard 5				
	Standard 6				
Calibration verification CCV	S	0.374	0.360	1.04	Y
Calibration verification					
Calibration verification					

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 1647066
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer: Mm
2nd Reviewer: J

METHOD: Inorganics, Method 376.2

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$$\%R = \frac{\text{Found}}{\text{True}} \times 100 \quad \text{Where,}$$

Found =

concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).

True =

concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$$RPD = \frac{|S-D|}{(S+D)/2} \times 100 \quad \text{Where,}$$

S = Original sample concentration
D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated		Reported		Acceptable (Y/N)
					%R	/ RPD	%R	/ RPD	
Les	Laboratory control sample	S	0.640	0.610	105		104		Y
W20703 01	Matrix spike sample	↓	(SSR-SR) 0.583	↓	96		96		↓
↓	Duplicate sample	↓	0.664	0.652	2		2		↓

Comments: Refer to appropriate worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

TOTLOC8

